RAC

RAC provides support for military and commercial customers in the following areas:

- Business Process Reengineering
- Component/System Modernization
- Component/System Reliability Assessment & Prediction
- Component Obsolescence
- Electronic Document Productization & Dissemination
- Electrostatic Discharge Susceptibility Analysis
- Environmental Characterization
- Environmental Stress Screening
- Failure Analysis
- Failure Data Collection & Analysis
- Failure Mode, Effects & Criticality Analysis
- Failure Reporting & Corrective Action Implementation
- Fault Tree Analysis
- Life Extension Analysis
- Maintainability Analysis
- Parts Control Programs
- Reliability Centered Maintenance & Predictive Maintenance
- Reliability Modeling & Simulation
- Reliability Program Assessments
- Reliability Test Planning
- R&M Program Planning & Implementation
- Testability Analysis
- Worst Case Circuit Analysis

RAC provides valuable assistance to researchers and engineers in the areas of reliability, maintainability, quality, and supportability (R/M/Q/S). Along with these technical disciplines, RAC has also developed related expertise in areas that these subjects influence such as maintenance planning, lifetime extension assessment, business process reengineering, and component obsolescence. RAC offers the largest reliability and maintainability (R&M) databases that include not only bibliographic references but also quantitative data in the form of failure rates, and failure modes and mechanisms.

The RAC addresses R/M/Q/S issues across all product and system lifecycle phases. Product and system development activities emphasize specifying, designing-in, controlling, and measuring R/M/Q/S. Production related activities focus on ensuring that the designed-in characteristics are not degraded in the production environment. Operation and maintenance activities center on continuing product, process, and system performance while improving the ability to support and maintain equipment throughout the life cycle. Modifications are evaluated and implemented to improve R/M/Q/S characteristics and reduce warranty costs.

TATs & *Products*

Reliability Engineering Support to AN/ALQ–131 Electronic Countermeasures Program

RAC is identifying failure trends in complex fielded countermeasures systems so chronic costly reliability problems can be solved cost effectively. Design fixes are identified and documentation developed so that problems can be fixed with organic resources.

New Systems Reliability Assessment Methods

RAC has developed new techniques for assessing the reliability of systems and products at various stages of their lifetimes. Traditional reliability prediction approaches have been expanded to take advantage of data as it becomes available from actual manufacture, test, and operational use.

Electronic Reliability Design Handbook (MIL–HDBK–338)

RAC has updated one of the most comprehensive sources of reliability information currently available. The document was expanded to include techniques and approaches developed since its last revision over 10 years ago.

Federal Aviation Administration (FAA) Component Obsolescence Support

The longer electronic hardware remains in operation, the ability to repair it becomes a greater problem, such as the inability to obtain spare parts. RAC is supporting the FAA in automating its planning process for

solving this problem, by helping to identify problem parts so that cost-effective decisions can be made regarding parts substitutions and/or lifetime buys.

Life Extension Assessment of Sensor Fused Weapon

RAC has combined efforts with the Advanced Materials and Processes Technology IAC (AMPTIAC), to investigate the feasibility of extending the storage/operating life of a critical Air Force system. Major activities include the examination of life limiting failure mechanisms and the development of accelerated testing plans to demonstrate reliability in abbreviated time frames. Shelf life will be extended to 20 years and modifications to the system are being proposed to meet the requirement.

Reliability Toolkit: Commercial Practices Edition

This toolkit assists commercial and military to develop, manufacture, and sustain reliable products in today's competitive world. The Reliability Toolkit addresses the use of best commercial practices and how to comply with the Perry memorandum.

Non-Electronic Parts Reliability Data

This document provides failure rates for a wide variety of component types, including mechanical, electromechanical, and discrete electronic parts and assemblies. The document presents summary-level failure rates for numerous detailed part categories by environment and quality level. It contains 1,000 pages of data on more than 25,000 parts and is the single most comprehensive resource on the subject.

Blueprints for Product Reliability

This six part series of documents provides insight into, and guidance in applying sound reliability practices. The approaches described are based on best commercial practices and the most effective practices of the now rescinded military documents in reliability. The Blueprints describe the merits of the practices under varying application scenarios.

PRISM

This software tool predicts system reliability that is based on the failure data in its extensive databases. PRISM incorporates newly RAC developed failure models ("RAC RATES") and the New System Reliability Assessment Technique into one tool designed for both operating and dormant situations. Now that DoD no longer maintains MIL HDBK 217, PRISM will likely become the most accepted reliability prediction methodology used in military and commercial applications.

Training Courses

RAC presents training in virtually every aspect of reliability in open registration settings, in customer tailored versions at their facilities and in distance learning formats.

For a listing of products, prices, availability, and distribution limitations, contact RAC or visit our Web site at **http://rac.iitri.org/**

In the near future, RAC's URL will change to http://iac.dtic.mil/rac

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